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**Carreiro et al.**

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(54) **SODIUM GALLIUM OXIDE ELECTROLYTE  
ADDITIVE FOR ALUMINUM ANODE  
ACTIVATION**

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(\*) **Notice:** Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
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429/29

#### (57) **ABSTRACT**

An additive for an aluminum-based semi-fuel cell system  
includes a combination of components including gallium,  
oxygen, and a sodium component dissolvable in an alkaline  
electrolyte solution such as seawater and sodium hydroxide.  
These components form sodium gallium oxide and prevent  
or reduce formation of an oxide layer on a surface of an  
aluminum anode in the alkaline electrolyte of the semi-fuel  
cell system.

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14 Claims, No Drawings